Supplemental

EXAMINER'S AMENDMENT

1. An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.

The application has been amended as follows:

In the specification:

In the specification, page 24, line 19, after "by", delete $1/\sqrt{1 + (4Q)^2}$,

insert -- $1/\sqrt{1 + (4Q)^2}$,--.

$$H(j\omega) = \frac{V_o}{V_I}(j\omega) = \frac{A}{1 + jRC\omega - j2Q} \quad (3)$$

This shows a passband gain of A 122 at a center frequency of 2Q/RC 124, with a 3-dB bandwidth of 2RC 126. Thus, the quality factor of the second-order stage will be Q. For the image signal however, the signal at the I branch leads, and as a result:

$$H(j\omega) = \frac{A}{1 + jRC\omega + j2Q} \quad (4)$$

which shows that the image located at 2Q/RC is rejected by $\frac{1}{\sqrt{(1+(4Q)2}}$. Therefore, the biquad stage has an asymmetric frequency response, that is, the desired signal may be assigned to positive frequencies, whereas the image is attributed to negative frequencies. In general, the frequency response of the biquad stage is obtained by applying the following complex-domain transformation to a normalized real-domain lowpass filter:

$$j\omega - \frac{j(\omega - \omega_0)}{BW} \quad (5)$$

where ω_0 is the bandpass (BP) center frequency, and BW is the lowpass (LP) equivalent bandwidth, equal to half of the bandpass filter bandwidth. For instance, for a second-order biquad stage (as shown in Figure 6), $\omega_0 = 2Q/RC$, and BW = 1/RC. The biquad stage is designed by finding its LP equivalent frequency response using equation (5). Once the LP poles are known,